B. Claims

The following is a complete listing of the claims, and replaces all earlier versions and listings.

1. (Currently Amended) A method for acquiring information in relation to a device, which comprises a substrate and a plurality of biological materials disposed on a surface of said substrate, wherein the information is acquired from said surface using time of flight secondary ion mass spectrometry, the method comprising at least the steps of:

irradiating a pulsed primary ion beam on different positions of said surface of said device in a discontinuous pattern, which is a specifically programmed or a random pattern to suppress an influence of a charge-up of an irradiated area, wherein ~~irradiation of a unit~~ the irradiated area with the primary ion beam in one scan is not duplicated, and said primary ion beam has a [[spot]] beam size of a smaller area than an area to be measured on said surface of said device;

conducting mass-analysis of secondary ions via time of flight, said secondary ion being generated by irradiating said pulsed primary ion beam; and

reconstructing analyzed results obtained by conducting said mass-analysis to form [[a]] two-dimensional information on the basis of said pattern of said irradiating pulsed primary ion beam.

2-3. (Cancelled)

4. (Previously Presented) The method according to claim 1, wherein an ion species of said primary ion beam is a gold ion (Au^+, Au_2^+, Au_3^+).

5. (Original) The method according to claim 1, wherein the acquisition of information from the device surface is conducted by a combination of scanning of the primary ion beam and positional scanning of said substrate itself.

6. (Previously Presented) The method according to claim 1, wherein the device is a chip on which the biological materials are disposed.

7. (Previously Presented) The method according to claim 6, wherein one of the biological materials is a nucleic acid.

8. (Original) The method according to claim 7, wherein the nucleic acid is selected from the group consisting of DNA and RNA.

9. (Original) The method according to claim 8, wherein the DNA is selected from the group consisting of oligodeoxynucleotides, polydeoxynucleotides and cDNA (complementary DNA).

10. (Previously Presented) The method according to claim 6, wherein one of the biological materials is PNA (peptide nucleic acid).

11. (Previously Presented) The method according to claim 6, wherein one of the biological materials is a protein.

12. (Previously Presented) The method according to claim 7, wherein the secondary ion species generated by said primary ion beam includes at least a species derived by fragmentation and ionization of a phosphate backbone derived from the nucleic acid.

13. (Original) The method according to claim 12, wherein the secondary ion species generated by said primary ion beam includes at least any one of P^-, PO^-, PO_2^- and PO_3^-.

14. (Previously Presented) The method according to claim 8, wherein the secondary ion species generated by said primary ion beam includes at least a species derived by fragmentation and ionization of a nucleic acid base.

15. (Original) The method according to claim 14, wherein the secondary ion species generated by said primary ion beam includes at least any one of $(adenine\text{-}H)^-$, $(thymine\text{-}H)^-$, $(guanine\text{-}H)^-$, $(cytosine\text{-}H)^-$ and $(uracil\text{-}H)^-$.

16. (Previously Presented) The method according to claim 10, wherein the secondary ion species generated by said primary ion beam includes at least a species derived by fragmentation and ionization of a peptide backbone.

17. (Previously Presented) The method according to claim 11, wherein the secondary ion species generated by said primary ion beam includes at least a species derived by fragmentation of an amino acid residual group and a species derived by ionization of the amino acid residual group.

18. (Previously Presented) The method according to claim 1, wherein a time of flight secondary ion mass spectrometry apparatus for the use in the method is a reflectron apparatus in which a measurement is carried out while said substrate is electrically grounded.

19. (Withdrawn) A method for analyzing components of a biological-related material disposed on a biochip in relation to the biochip, which includes a substrate, and a plurality of biological-related materials disposed on a surface of said substrate from said surface of said biochip using time of flight secondary ion mass spectrometry, including at least the steps of:

irradiating pulsed primary ion beam on said surface of said biochip in a discontinuous pattern, and said primary ion beam having a spot size of smaller area than an area to be measured on said surface of said biochip;

conducting mass-analysis of secondary ions via time of flight, said secondary ion being generated by irradiating said pulsed primary ion beam;

reconstructing analyzed results obtained by conducting said mass-analysis to form a two-dimensional information on the basis of said pattern of said irradiating pulsed primary ion beam; and

conducting component-analysis of the biological-related material of a necessary portion contained in the obtained two-dimensional image on the basis of the mass spectrum information of said necessary portion.

20. (Currently Amended) An apparatus for acquiring information in relation to a ~~biochip~~ device, which comprises a substrate and a plurality of biological materials disposed on a surface of said substrate, wherein the information is acquired from said surface using time of flight secondary ion mass spectrometry, the apparatus comprising at least:

a means for irradiating pulsed primary ion beam on said surface of said ~~biochip~~ device in a discontinuous pattern, which is a specifically programmed or a random pattern to suppress an influence of a charge-up of an irradiated area, wherein ~~irradiation of a unit~~ the irradiated area with the primary ion beam in one scan is not duplicated, said surface of said ~~biochip~~ device having the biological materials disposed thereon, and said primary ion beam having a [[spot]] beam size of a smaller area than an area to be measured on said surface of said ~~biochip~~ device;

a means for conducting mass-analysis of secondary ions via time of flight, said secondary ion being generated by irradiating said pulsed primary ion beam; and

a means for reconstructing analyzed results obtained by conducting said mass-analysis to form a two-dimensional information on the basis of said pattern of said irradiating pulsed primary ion beam.

21. (New) The method according to claim 1, wherein a volumetric resistivity of the substrate is not less than 10^{10} ohm·cm (300K).

22. (New) The method according to claim 1, wherein a diameter of the primary ion beam is not larger than 10 μm.

23. (New) The apparatus according to claim 20, wherein a volumetric resistivity of the substrate is not less than 10^{10} ohm·cm (300K).

24. (New) The apparatus according to claim 20, wherein a diameter of the primary ion beam is not larger than 10 μm.